Assignment 2

Textbook Assignment: “Utility Systems”; “Canopy Systems.” Pages 1-23 through 2-8.

Learning Objectives:
Identify operating principles and maintenance safety precautions for the missile liquid cooling utility system.

2-1. What type of coolant is used in the F-14 aircraft missile cooling system?

1. Freon
2. Hydraulic fluid
3. Dielectric fluid
4. Methyl alcohol

2-2. What component houses the coolant pump and the air-moisture-contaminant remover?

1. Right wing fillet
2. Right Phoenix missile fairing
3. Left Phoenix missile fairing
4. Left wing fillet

2-3. The missile coolant pump circulates coolant at what prescribed rate?

1. 8 gallons per minute
2. 8 gallons per second
3. 18 gallons per second
4. 18 gallons per minute

2-4. When the missile cooling system is in the warm-up mode, in what positions are the (a) cold air and (b) hot air modulating valves?

1. (a) Open (b) open
2. (a) Open (b) closed
3. (a) Closed (b) closed
4. (a) Closed (b) open

2-5. What material is used to cool the missile caolant pump?

1. Refrigerated air
2. Ram air
3. System coolant
4. Freon

2-6. The pneumatic pressure indicator is marked in what units of measure?

1. Degrees Fahrenheit
2. Pounds per square inch
3. Pounds per square foot

2-7. Which of the following contaminants will the air-moisture-contaminant remover NOT filter from the coolant?

1. Air
2. Moisture
3. Foreign particles
4. Standing water

2-8. If the remover filter is clogged, what color but-tan extends as a warning?

1. White
2. Red
3. Yellow
4. Green

2-9. Which of the following coolant’s should NOT be used in the missile cooling system?

1. Coolanol 25
2. Coolanol 25R
3. Flo-cool 108
4. Flo-cool 180

2-10. What is the minimum number of minutes that coolant should be circulated by the aircraft pumps before a sample is taken?

1. Five minutes
2. Six minutes
3. Seven minutes
4. Eight minutes

Learning Objectives:
Identify components of the windshield wiper and washer systems and their functions. Recognize components of the aircraft rain repellent system.

2-11. The oscillating motion of the windshield wiper system is converted from rotary motion by which of the following parts?

1. Cam assembly
2. Bell crank assembly
3. Motion converter
4. Hydraulic slide valve

2-12. Windshield washer solution consists of 20 percent distilled water and what percent additional material?

1. 80 percent soap solution
2. 80 percent isopropyl alcohol
3. 80 percent aliphatic naphtha
4. 70 percent isopropyl alcohol and 10 percent soap solution

2-13. The motor/pump assembly for the S-3 aircraft windshield washer is mounted in what location?

1. In the reservoir
2. Between the reservoir and the filter
3. In the nosewheel well
4. Behind the cockpit switch panel

2-14. The windshield wiper switch must be in which of the following positions before the rain repellent system will function?

1. Low
2. Off
3. Either 1 or 2 above
4. High

2-15. Approximately how many applications of rain repellent fluid are available from a full container?

1. 10
2. 30
3. 60
4. 100

2-16. The nitrogen pressure in a fully charged rain repellent container will read what psi?

1. 50 psi
2. 75 psi
3. 100 psi
4. 150 psi

Learning Objective: *Identify operating principles, components, and maintenance procedures for fire-extinguishing utility systems.*

2-17. Aircraft fire-extinguishing utility systems are designed primarily to protect what aircraft components?

1. Heaters
2. Engines
3. Fuel systems
4. Electronic equipment

2-18. The inspection and maintenance of aircraft fire-extinguishting systems is an important responsibility of the AME.

1. True
2. False

2-19. CF_3Br is a desirable fire-extinguishing agent for which of the following reasons?

1. It is noncorrosive and leaves no residue
2. It is an electrical insulator
3. It goes farther than CO_2, and does not deteriorate
4. Each of the above

2-20. The CF_3Br agent discharged from the distributing assembly as a spray extinguishes an engine fire by what action?

1. It lowers the temperature to a point at which combustion will not take place
2. It forces the fire away from the engine
3. It vaporizes in the heat and smothers the fire by reducing the oxygen content of the area
4. It acts in all of the above ways

2-21. What retains the nitrogen charge and CF_3Br agent in the container?

1. A bonnet and a cartridge
2. A bonnet and a frangible disc
3. A frangible disc and a cartridge
4. A frangible disc and a fusible plug

2-22. The fusible plug in the CF_3Br system melts at temperatures within what range?

1. 100° to 120°F
2. 166° to 180°F
3. 208° to 220°F
4. 225° to 240°F

2-23. Which of the following statements concerning CF_3Br fire extinguishing systems is false?

1. Some systems are equipped with a relief valve instead of a fusible plug
2. Some larger aircraft use more than one fire-extinguishing agent container to direct the agent to several points
3. Some system containers are equipped with two valve assemblies that provide a secondary means of discharging the agent from the container
4. Some systems are equipped with pneumatically operated valves as a secondary means of discharging the agent from the container

2-24. When performing a leakage test on a fire-extinguishing system, what should you use to pressurize the system?

1. CO_2
2. CF_3Br
3. Nitrogen
4. Compressed air

Learning Objective: *Recognize the purpose of the thermal radiation protection system.*

2-25. What type radiation shields are on the A-6 aircraft?

1. Fiber glass panels
2. Fabric curtains
3. Metal panels
4. Aluminized cloth

2-26. The sliding panels of the canopy radiation enclosures on the A-6 aircraft are moved to the open, half open, and closed positions by what means?

1. Manually only
2. Electrically only
3. Manually or electrically
4. Pneumatically

2-27. When the thermal closure switch is placed in the CLOSE position for manual operation of the A-7 radiation protection system, which of the following actions occurs first?

1. The seat position switch is actuated
2. The closure selector valve is energized
3. The ejection seat is lowered to within 1/4 inch of full down position
4. The extend lines to the closure actuators are vented

2-28. What component in the A-7 radiation system initiates the automatic made of operation?

1. Nuclear flash sensor
2. Thermal closure switch
3. Closure selector valve
4. Switching, demodulator unit

2-29. When flying special weapons missions, the pilot's helmet is equipped with which of the following devices?

1. Polarized lens
2. ELF lens
3. Voice powered mike
4. Special insulated line

Learning Objective: *Identify the types of canopy systems and their purpose. Recognize the function, operation, and purpose of the components in the F-14 aircraft canopy system.*

2-30. The canopy of modern high–performance sit-craft serves which of the following purposes?

1. Protection
2. Visibility
3. Avenue of escape
4. Each of the above

2-31. What are the two types of canopies commonly used on naval aircraft?

1. Hinged and actuating
2. Sliging and clamshell
3. Actuating and sliding
4. Split and clamshell

2-32. The F-14 canopy contains how many acrylic panels?

1. One
2. Two
3. Three
4. Four

ITEMS 2-33 THROUGH 2-41 PERTAIN TO THE F-14 AIRCRAFT CANOPY SYSTEM.

2-33. What is the indicator that the canopy is closed and locked?

1. The reference mark are aligned
2. The marker indicates closed
3. The pressure indicator goes to zero
4. The control handle indicates closed

2-34. How many control handles are there for opening and closing the F–14 canopy?

1. One
2. Two
3. Three
4. Four

REFER TO FIGURE 2-2 IN THE TEXT TO ANSWER ITEMS 2-35 THROUGH 2–41.

2-35. When the canopy control handle is positioned to OPEN, what component in the system prevents nitrogen pressure from escaping from the No. 6 valve through the overboard vent?

1. The number 1 valve
2. The number 2 valve
3. A solenoid valve
4. A check valve

2-36. When the canopy control handle is in position ti OPEN, nitrogen pressure is routed through what valves?

1. Number 1 valve to he unlock part of the canopy-lock pnuematic actuator
2. Number 2 and 6 valves to the unlock part of the canopy-lock pnuematic actuator
3. Number 1 and 6 valves to the unlock part os the canopy-lock pnuematic actuator
4. Number 1 and 2 valves to the unlock part of the canopy-lock pnuematic actuator

2-37. When the canopy handle is pulled to the open position, the number 1, 2, and 6 valves are positioned by which of the following methods?

1. 2 and 2 electrically, 6 pneumatically
2. 1 and 2 mechanically, 6 pneumatically
3. 1 and 2 pneumatically, 6 mechanically
4. 1 and 2 hydraulically, 6 electrically

2-38. What operating nitrotgen pressure is used to open the canopy?

1. 115 psi
2. 195 psi
3. 245 psi
4. 325 psi

2-39. What cnmponent(s) within the canopy hydraulic actuator converts nitrogen pressure to hydraulic pressure for operating the actuator?

1. Open transfer cylinder
2. Close transfer cylinder
3. Flow regulator and bypass valve
4. Open and close transfer cylinders

2–40. Nitrogen pressure passing through the timer check valve is used to operate the canopy actuator to the open position. Which of the following components makes the nitrogen available at the timer check valve?

1. Shuttle valve
2. Number 1 valve
3. Open transfer cylinder
4. Canopy pneumatic timer

2-41. When the canopy hydraulic actuator opens the canopy, the displaced hydraulic fluid on the close side of the actuator returns to what device?

1. Number 4 valve in the control module
2. Open side of the canopy hydraulic actuator
3. Close transfer cylinder
4. Overboard vent through the C2 port

2-42. What canopy control handle position stops the canopy motion in any desired positions?

1. Hold
2. Normal close
3. Normal open
4. Stop

2–43. Which of the following forces normally classes the canopy?

1. Pneumatic power
2. Canopy weight
3. Electrical power
4. Each of the above

2–44. (Refer to figure 2–2 in the text.) When the canopy is closing, what happens to the nitrogen in the open transfer cylinder that is displaced by the hydraulic fluid from the open side of the hydraulic actuator?

1. It is returned to the auxiliary pneumatic reservoir
2. It is returned to the canopy pneumatic reservoir
4. It is vented overboard through the number 1 valve in the control module
4. It is vented overboard through the number 3 valve in the control module

2-45. When the canopy caution lights on the advisory panels go out, this indicates the canopy is in which of the following positions?

1. Full down
2. Full forward
3. Locked
4. Full up and locked position

2-46. The boost closing mode is used to close the canopy under what of the following circumstances?

1. When the wind prevents normal closing
2. When AFC 95 has been installed
3. When valve NO. 4 is inoperative
4. When nitrogen pressure is low

2-47. (Refer to figure 2-2 in the text.) The pressure for boosted closing of the canopy comes from which of the following components?

1. The 790 psi pressure reducer
2. The 1250 psi relief valve
3. The 325 psi pressure reducer
4. The reservoir relief valve

2-48. Under which of the following circumstances should the auxiliary opening made be used?

1. When the port fails to open
2. When the control handle will not move
3. When nitrogen pressure drops below 225 psi
4. When not modified by AFC 95

2–49. What is the purpose of the auxiliary pneumatic reservoir?

1. To operate the canopy hydraulic cylinder when normal reservoir pressure is low
2. To open the emergency cylinder when normal reservoir pressure is low
3. To supply boosted pressure to the system when normal reservoir pressure is low
4. To unlock the canopy when normal reservoir pressure is low

(REFER TO FIGURE 2-2 IN THE TEXT TO ANSWER ITEMS 2-50 THROUGH 2-54.) IN ITEMS 2-50 THROUGH 2-54, SELECT FROM COLUMN B THE COMPONENT IN THE CANOPY SYSTEM THAT PERFORMS THE FUNCTION(S) LISTED IN COLUMN A. COMPONENTS IN COLUMN B MAY BE USED MORE THAN ONCE.

	A. Functions	B. Components
2-50.	Operates on nitrogen pressure received from the canopy pneumatic control on the module canopy pneumatic timer	1. Flow regulators 2. Timer check valve 3. canopy-lock pneumatic actuator 4. Canopy pneumatic timer
2-51.	Vents pneumatic pressure from the canopy hydraulic actuator to the canopy pneumatic control module for canopy closing	
2-52.	Vents/pressurizes the canopy hydraulic actuator shutoff valves	
2-53.	Controls the operational speed of the canopy hydraulic actuator	
2-54.	Moves the canopy forward to the locked position or aft to the unlocked position	

2-55. {Refer to figure 2-2 in the text.) What valve prevents the canopy pneumatic reservoir from going to zero pressure when a leak develops in the system's servicing charging module?

1. Restrictor
2. Relief
3. Shutoff
4. Check

2-56. (Refer to figure 2-2 in the text.) When auxiliary mode is selected to unlock the canopy, nitrogen is directed to the unlocking side of the canopy-lock pneumatic actuator at what pressure?

1. 225 psi
2. 325 psi
3. 3,000 psi
4. 4,100 psi

IN ITEMS 2-57 THROUGH 2-61, SELECT FROM COLUMN B THE COMPONENT IN THE CANOPY SYSTEM THAT PERFORMS THE FUNCTION(S) LISTED IN COLUMN A. COMPONENTS IN COLUMN B MAY BE USED MORE THAN ONCE.

	A. Functions	B. Components
2-57.	Allows normal pneumatic pressure or auxiliary pneumatic pressure to enter the canopy lock pneumatic actuator	1. Low pressure Sensor 2. 325 psi pressure reducer 3. Shuttle Valve 4. Auxiliary Unlock pneumatic release valve
2-58.	Causes the module valves to lock pressure in the canopy hydraulic actuator for canopy counter-balance	
2-59.	Permits auxiliary pneumatic reservoir pressure to be applied to the shuttle valve	
2-60.	Provides the normal operating pneumatic pressure for the system	
2-61.	Operates the No. 5 and No. 6 valves in the pneumatic control module	

2-62. Which of the following valves will prevent aver-pressurization of the canopy pneumatic system?

1. Reservoir relief
2. 1250 psi relief
3. 500 psi relief
4. Restrictor

2-63. Concerning servicing a canopy system's normal and auxiliary reservoirs to maximum pressure and capacity, which of the following statements is correct?

1. The auxiliary reservoir has a larger capacity and lower pressure than the canopy reservoir
2. The auxiliary reservoir has a higher pressure and lower capacity than the canopy reservoir
3. The auxiliary reservoir has a smaller capacity but the same pressure as the canopy reservoir
4. The auxiliary reservoirs capacity and pressure are the same as the canopy reservoirs'

2–64. After the auxiliary unlocking made has been used to open the canopy, which of the following actions must be accomplished to return the system to normal?

1. Auxiliary pneumatic reservoir must be reserviced
2. The unlock shuttle valve must be manually reset
3. The canopy–lock pneumatic actuation must be repositioned
4. The auxiliary unlock pneumatic release valve cam must be manually reset

2-65. The position of the unlock shuttle in the canopy system is controlled by what action or device(s)?

1. Pneumatic pressure
2. Mechanical linkage from the canopy central handle
3. A cable and pulley assembly and an electric cam
4. Mechanical linkage from the canopy-lock pneumatic actuator

2-66. When ejection is initiated, the upward movement of the canopy by the hydraulic actuator is accomplished by what means?

1. Hydraulic pressure and mechanical linkages
2. Pneumatic pressure and mechanical linkages
3. High-pressure gas
4. Mechanical linkages only

2-67. (Refer to figure 2-4/2-5 in the text.) What is the total number of emergency canopy initiator handles in the system?

1. Six
2. Two
3. Three
4. Four

2-68. The backup initiator is located on what part of the canopy area?

1. The back of the forward ejection seat
2. The canopy actuator
3. The cockpit turtle deck
4. The safe–and-arm module